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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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STRAUB & POKOTYLO 620 TINTON AVENUE BLDG. B, 2ND FLOOR TINTON FALLS, NJ 07724			LEE, SHUN K	
			ART UNIT	PAPER NUMBER
			2884	

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/758,248

Applicant(s)

ARNOLD ET AL.

Examiner

Shun Lee

Art Unit

2884

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>0405</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 450 and 890. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:
- (a) on pg. 12, "750" in line 15 should probably be --750a, 750b, 750c-- (37 CFR 1.84(p)(4));
 - (b) on pg. 12, "730" in line 15 should probably be --730a, 730b, 730c, 730d, 730e-- (37 CFR 1.84(p)(4));
 - (c) on pg. 12, "splitter 760" in line 17 should probably be --splitter 770-- (37 CFR 1.84(p)(4)); and
 - (d) on pg. 12, "detectors 760" in line 17 should probably be --detectors 760a, 760b, 760c-- (37 CFR 1.84(p)(4)).

Appropriate correction is required.

Claim Objections

4. Claims 1, 9, 17, and 26 are objected to because of the following informalities:
- (a) in claim 1, "detected" on line 3 should probably be --detecting--;
 - (b) in claim 1, "detected" on line 7 should probably be --detecting--;
 - (c) in claim 9, "method" on line 1 should probably be --apparatus--;
 - (d) in claim 9, "detected" on line 9 should probably be --detect--;
 - (e) in claim 9, "to recording" on line 10 should probably be --to record--;
 - (f) in claim 17, "are recorded" on line 6 should probably be deleted;
 - (g) in claim 17, "a light source" on line 9 should probably be --said light source--;
 - (h) in claim 17, "are recorded" on line 12 should probably be deleted;
 - (i) in claim 26, "to" on line 11 should probably be deleted; and

(j) in claim 26, "to recording" on line 13 should probably be --to record--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6. Claims 1, 2, 5, 8, 17, 18, 21, and 25 are rejected under 35 U.S.C. 102(a) as being anticipated by Maleki *et al.* (US 6,490,039).

In regard to claim 1, Maleki *et al.* disclose (Figs. 2, 3a, and 5a) a method for detecting a refractive index of an analyte, the method comprising:

- (a) applying a light source (220) to a fiber (210, 210a, 210b, 520) optically coupled with a microsphere (201);
- (b) detecting (see optical detection module 230 in Fig. 2) light from the fiber (210, 210a, 210b, 520);
- (c) recording one or more resonance frequencies observed in the detected light (column 6, lines 15-20; column 7, lines 41-56; Fig. 4);
- (d) surrounding the microsphere (201) with the analyte (column 6, lines 15-20; Fig. 4);
- (e) applying the light source (220) to the fiber (210, 210a, 210b, 520) optically coupled with the microsphere (201);

- (f) detecting (see optical detection module 230 in Fig. 2) light from the fiber (210, 210a, 210b, 520);
- (g) recording one or more resonance frequencies observed in the detected light (column 6, lines 15-20; column 7, lines 41-56; Fig. 4);
- (h) determining a change in one or more resonance frequencies (column 6, lines 15-20; column 7, lines 41-56; Fig. 4); and
- (i) determining change in a refractive index using the change in resonant frequency (column 6, lines 15-20; column 7, lines 41-56; Fig. 4).

In regard to claim **2** which is dependent on claim 1, Maleki *et al.* also disclose (column 7, lines 20-25) that the microsphere is silica (*e.g.*, quartz).

In regard to claim **5** which is dependent on claim 1, Maleki *et al.* also disclose (column 7, lines 20-25) that the microsphere is polystyrene.

In regard to claim **8** which is dependent on claim 1, Maleki *et al.* also disclose (column 7, lines 41-44) identifying the analyte using the determined change in refractive index.

In regard to claim **17**, Maleki *et al.* disclose (Figs. 2, 3a, and 5a) a method for determining a refractive index profile of an analyte, the method comprising:

- (a) for each of a plurality of wavelengths (*i.e.*, spectrum; column 1, lines 29-33), i) applying a light source (220) at the wavelength to each of a plurality (column 8, line 66 to column 9, line 4) of microspheres (201) and for each of the plurality of microspheres (201), A) detecting light (see optical detection module 230 in Fig. 2),

- and B) recording one or more resonant frequencies are recorded (column 6, lines 15-20; column 7, lines 41-56; Fig. 4);
- (b) surrounding the microspheres (201) with the analyte (column 6, lines 15-20; Fig. 4);
- (c) for each of a plurality of wavelengths, i) applying a light source (220) at the wavelength to each of the plurality of microspheres (201) and for each of the plurality of microspheres, A) detecting light (see optical detection module 230 in Fig. 2), and B) recording one or more resonant frequencies are recorded (column 6, lines 15-20; column 7, lines 41-56; Fig. 4);
- (d) determining changes in the resonant frequencies associated with each of a plurality of wavelength, microsphere pairs (column 6, lines 15-20; column 7, lines 41-56; Fig. 4); and
- (e) determining a refractive index profile using the changes in the resonant frequencies (column 6, lines 15-20; column 7, lines 41-56; Fig. 4).

In regard to claim **18** which is dependent on claim 17, Maleki *et al.* also disclose (column 7, lines 20-25) that at least one of the microspheres is silica (*e.g.*, quartz).

In regard to claim **21** which is dependent on claim 17, Maleki *et al.* also disclose (column 7, lines 20-25) that at least one of the microspheres is polystyrene.

In regard to claim **25** which is dependent on claim 17, Maleki *et al.* also disclose (column 7, lines 41-44) identifying the analyte using the determined refractive index profile.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 3, 4, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki *et al.* (US 6,490,039) in view of Ohnaka *et al.* (US 5,194,333).

In regard to claim 3 which is dependent on claim 2, while Maleki *et al.* also disclose (column 8, lines 25-44) to provide a surface coating in order for the microsphere to respond to specific analytes, the method of Maleki *et al.* lacks an explicit description that a surface of the microsphere is octyl. However, surface coatings suitable for absorbing desired analytes are well known in the art. For example, Ohnaka *et al.* teach (column 1, lines 13-53) to provide an octyl surface for absorption. Therefore it would have been obvious to one having ordinary skill in the art at the time

of the invention to provide an octyl surface for the microsphere in the method of Maleki *et al.*, in order to absorb desired analytes so as to respond to desired analytes.

In regard to claim **4** which is dependent on claim 2, while Maleki *et al.* also disclose (column 8, lines 25-44) to provide a surface coating in order for the microsphere to respond to specific analytes, the method of Maleki *et al.* lacks an explicit description that the surface of the microsphere has been treated with octyldimethylchlorosilane. However, surface coatings suitable for absorbing desired analytes are well known in the art. For example, Ohnaka *et al.* teach (column 7, lines 14-18) to treat microsphere surfaces with octyldimethylchlorosilane, in order to obtain a surface coating (column 1, lines 13-53). Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to treat the microsphere surface in the method of Maleki *et al.* with octyldimethylchlorosilane, in order to absorb desired analytes so as to respond to desired analytes.

In regard to claim **19** which is dependent on claim 18, Ohnaka *et al.* is applied as in claim 3 above.

In regard to claim **20** which is dependent on claim 18, Ohnaka *et al.* is applied as in claim 4 above.

10. Claims 6 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki *et al.* (US 6,490,039) in view of Frick (US 6,901,101).

In regard to claim **6** which is dependent on claim 1, while Maleki *et al.* also disclose (column 7, lines 20-25) that suitable microsphere material may be selected according to the specific requirements of a particular application, the method of

Maleki *et al.* lacks an explicit description that the microsphere is sapphire. However, microsphere materials are well known in the art. For example, Frick teaches (column 5, lines 63-37) to provide suitable materials such as sapphire, in order to obtain low optical losses. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to select a known microsphere material such as sapphire for the microsphere in the method of Maleki *et al.*, in order to obtain low optical losses when that is a specific requirement of a desired application.

In regard to claim **22** which is dependent on claim 17, Frick is applied as in claim 6 above.

11. Claims 7, 9, 10, 13, 15, 16, 23, 26, 27, 30, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki *et al.* (US 6,490,039) in view of Rosenberger *et al.* (US 6,781,696).

In regard to claim **7** which is dependent on claim 1, the method of Maleki *et al.* lacks that a surface of the microsphere has been modified to avoid adsorption of the analyte. Rosenberger *et al.* teach (column 9, lines 40-43) to control surface contamination, in order to improve the measurement results. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to modify a surface of the microsphere in the method of Maleki *et al.*, in order to avoid adsorption so as to improve the measurement results.

In regard to claim **9**, Maleki *et al.* disclose (Figs. 2, 3a, and 5a) an apparatus for detecting a refractive index of an analyte, the apparatus comprising:

(a) an optical fiber (210, 210a, 210b, 520) optically coupled with a microsphere (201);

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- (b) a light source (220) optically coupled with the optical fiber (210, 210a, 210b, 520);
- (c) a light detector (230) optically coupled with the optical fiber (210, 210a, 210b, 520);
- (d) means (240; column 5, lines 28-33) for recording one or more resonance frequencies observed in the detected light (column 6, lines 15-20; column 7, lines 41-56; Fig. 4);
- (e) means (501) for surrounding the microsphere with the analyte (column 6, lines 15-20; Fig. 4);
- (f) control means (240) for controlling the light detector to detect light from the optical fiber and controlling the means for recording to record one or more resonance frequencies observed in the detected light, both before and after the microsphere is surrounded with the analyte;
- (g) means (240; column 5, lines 28-33) for determining a change in one or more resonance frequencies (column 6, lines 15-20; column 7, lines 41-56; Fig. 4); and
- (h) means (240; column 5, lines 28-33) for determining change in a refractive index using the change in resonant frequency (column 6, lines 15-20; column 7, lines 41-56; Fig. 4).

The apparatus of Maleki *et al.* lacks that the control means also controls the light source. Rosenberger *et al.* teach (column 7, lines 58-62) to provide a controller, in order to change the frequency of a tunable laser. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide a control

means which also controls the light source in the method of Maleki *et al.*, in order to change the frequency of a tunable laser within an integrated and automated system.

In regard to claim **10** which is dependent on claim 9, Maleki *et al.* also disclose (column 7, lines 20-25) that the microsphere is silica (*e.g.*, quartz).

In regard to claim **13** which is dependent on claim 9, Maleki *et al.* also disclose (column 7, lines 20-25) that the microsphere is polystyrene.

In regard to claim **15** which is dependent on claim 9, Rosenberger *et al.* is applied as in claim 7 above.

In regard to claim **16** which is dependent on claim 9, Maleki *et al.* also disclose (column 7, lines 41-44) means for identifying the analyte using the determined change in refractive index.

In regard to claim **23** which is dependent on claim 17, Rosenberger *et al.* is applied as in claim 7 above.

In regard to claim **26**, Maleki *et al.* disclose (Figs. 2, 3a, and 5a) an apparatus for determining a refractive index profile of an analyte, the apparatus comprising:

- (a) a plurality of optical fibers (210, 210a, 210b, 520) optically coupled to a plurality (column 8, line 66 to column 9, line 4) of microspheres (201);
- (b) means (220) for sourcing light at a plurality of wavelengths (*i.e.*, spectrum; column 1, lines 29-33) with the plurality of optical fibers;
- (c) means (230) for detecting light from the plurality of optical fibers;

- (d) means (240; column 5, lines 28-33) for recording one or more resonance frequencies observed in the detected light (column 6, lines 15-20; column 7, lines 41-56; Fig. 4);
- (e) means (501) for surrounding the plurality of microspheres with the analyte (column 6, lines 15-20; Fig. 4);
- (f) control means (240) for controlling the means for detecting to light from the plurality of optical fibers and controlling the means for recording to recording a profile of one or more resonance frequencies associated with each of a plurality of wavelength, microsphere pairs, both before and after the plurality of microspheres is surrounded with the analyte;
- (d) determining changes in the resonant frequencies associated with each of a plurality of wavelength, microsphere pairs (column 6, lines 15-20; column 7, lines 41-56; Fig. 4); and
- (e) means (240; column 5, lines 28-33) for determining a refractive index profile using the changes in the resonant frequencies associated with the plurality of wavelength, microsphere pairs (column 6, lines 15-20; column 7, lines 41-56; Fig. 4).

The apparatus of Maleki *et al.* lacks that the control means also controls the means for sourcing light at a plurality of wavelengths to apply light at a plurality of wavelengths to the plurality of optical fibers. Rosenberger *et al.* teach (column 7, lines 58-62) to provide a controller, in order to change the frequency of a tunable laser. Therefore it would have been obvious to one having ordinary skill in the art at the time of the

invention to provide a control means which also controls the means for sourcing light at a plurality of wavelengths in the method of Maleki *et al.*, in order to change the frequency of one or more tunable lasers within an integrated and automated system.

In regard to claim **27** which is dependent on claim 26, Maleki *et al.* also disclose (column 7, lines 20-25) that at least one of the microspheres is silica (*e.g.*, quartz).

In regard to claim **30** which is dependent on claim 26, Maleki *et al.* also disclose (column 7, lines 20-25) that at least one of the microspheres is polystyrene.

In regard to claim **32** which is dependent on claim 26, Rosenberger *et al.* is applied as in claim 7 above.

In regard to claim **33** which is dependent on claim 26, Maleki *et al.* also disclose (column 3, lines 5-7) that the plurality of wavelengths include about 1350 nm and about 1550 nm, the method of Maleki *et al.* lacks an explicit description that the plurality of wavelengths include about 980 nm. However, Maleki *et al.* further disclose (column 8, lines 15-17) that any convenient laser wavelength may be used. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to provide any convenient laser wavelength (*e.g.*, about 980 nm) in the method of Maleki *et al.*

In regard to claim **34** which is dependent on claim 26, Maleki *et al.* also disclose (column 7, lines 41-44) means for identifying the analyte using the determined refractive index profile.

12. Claims 11, 12, 28, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki *et al.* (US 6,490,039) in view of Rosenberger *et al.*

(US 6,781,696) as applied to claims 10 and 27 above, and further in view of Ohnaka *et al.* (US 5,194,333).

In regard to claim **11** which is dependent on claim 10, Ohnaka *et al.* is applied as in claim 3 above.

In regard to claim **12** which is dependent on claim 10, Ohnaka *et al.* is applied as in claim 4 above.

In regard to claim **28** which is dependent on claim 27, Ohnaka *et al.* is applied as in claim 3 above.

In regard to claim **29** which is dependent on claim 27, Ohnaka *et al.* is applied as in claim 4 above.

13. Claims 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki *et al.* (US 6,490,039) in view of Rosenberger *et al.* (US 6,781,696) as applied to claims 9 and 26 above, and further in view of Frick (US 6,901,101).

In regard to claim **14** which is dependent on claim 9, Frick is applied as in claim 6 above.

In regard to claim **31** which is dependent on claim 26, Frick is applied as in claim 6 above.

14. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maleki *et al.* (US 6,490,039).

In regard to claim **24** which is dependent on claim 17, Maleki *et al.* is applied as in claim 33 above.

15. Claims 1, 2, 5, 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being obvious over Arnold *et al.* (US 2003/0174923) in view of Maleki *et al.* (US 6,490,039).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2). The claims in the application define an invention that is merely an obvious variation of an invention disclosed in US 2003/0174923 since Maleki *et al.* teaches (column 7, lines 41-52) that one of the measurements of the target substance which can be determined based on the shift in resonance is the refractive index using quartz or polystyrene microspheres. Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to determine desired analyte properties (*e.g.*, refractive index) in the

apparatus and method of Maleki *et al.* based on the shift in resonance of quartz or polystyrene microspheres.

16. Claims 1, 2, 5, 9, 10, and 13 are rejected under 35 U.S.C. 103(a) as being obvious over Arnold *et al.* (US 2004/0196465) in view of Maleki *et al.* (US 6,490,039).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(I)(1) and § 706.02(I)(2). The claims in the application define an invention that is merely an obvious variation of an invention disclosed in US 2004/0196465 since Maleki *et al.* teaches (column 7, lines 41-52) that one of the measurements of the target substance which can be determined based on the shift in resonance is the refractive index using quartz or polystyrene microspheres.

Therefore it would have been obvious to one having ordinary skill in the art at the time of the invention to determine desired analyte properties (e.g., refractive index) in the apparatus and method of Maleki *et al.* based on the shift in resonance of quartz or polystyrene microspheres.

Double Patenting

17. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

18. Claims 1, 2, 5, 9, 10, and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1, 8, and 11 of US 2003/0174923 (copending Application No. 10/096,333) in view of Maleki *et al.* (US 6,490,039). The claims in the application define an invention that is merely an obvious variation of an invention claimed in copending Application No. 10/096,333 since Maleki *et al.* teaches (column 7, lines 41-52) that one of the

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measurements of the target substance which can be determined based on the shift in resonance is the refractive index using quartz or polystyrene microspheres.

This is a provisional obviousness-type double patenting rejection.

19. Claims 1, 2, 5, 9, 10, and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 4, 6, and 9 of US 2004/0196465 (copending Application No. 10/735,247) in view of Maleki *et al.* (US 6,490,039). The claims in the application define an invention that is merely an obvious variation of an invention claimed in copending Application No. 10/735,247 since Maleki *et al.* teaches (column 7, lines 41-52) that one of the measurements of the target substance which can be determined based on the shift in resonance is the refractive index using quartz or polystyrene microspheres.

This is a provisional obviousness-type double patenting rejection.

20. Claims 1, 2, 5, 9, 10, and 13 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-3, 6, 7, 14-16, 19, 20, and 34-39 of copending Application No. 10/768,977 in view of Maleki *et al.* (US 6,490,039). The claims in the application define an invention that is merely an obvious variation of an invention claimed in copending Application No. 10/768,977 since Maleki *et al.* teaches (column 7, lines 41-52) that one of the measurements of the target substance which can be determined based on the shift in resonance is the refractive index using quartz or polystyrene microspheres.

This is a provisional obviousness-type double patenting rejection.

Conclusion

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shun Lee whose telephone number is (571) 272-2439. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SL


CONSTANTINE HANNAHEER
PRIMARY EXAMINER